

REMARKS

Applicants note with appreciation the allowance of claims 1-10. Claims 11-13 drawn to a nonelected invention have been cancelled.

In response to the rejection of the remaining claims, claims 19 and 20 have been amended to clarify them and to place them in better condition for allowance, and new claims 24-33 have been added to provide the scope of protection to which applicant is believed entitled. In addition, allowed claims 1 and 10 have been amended for clarification, but remain allowable.

Claims 14-19 have been rejected as unpatentable over Motamedi under 35 USC 103, it being said that it would be obvious over the reference to form the top trench first. It is asserted in the Action that the reference teaches producing a pattern on a top surface, etching a top trench to a depth of less than 20%, producing another pattern on the bottom, etching a bottom trench, and then further etching the top trench to cause it to intersect with the top trench.

First of all, Motamedi does not teach the foregoing sequence, as acknowledged in the Office Action. However, it is further asserted in the Office Action that it would have been obvious to transpose the steps of the reference to produce the claimed sequence.

Even if it is assumed, for purposes of argument, that the steps of the Motamedi reference could be transposed, the disclosed method still would not teach the herein-claimed invention, and more particularly would not meet the terms of the claims of the present application.

The cited reference discloses, in Figs. 2a - 2f, a process in which a pattern is formed on a first (back) surface of a substrate (Fig. 2b) and the first surface is etched to form grooves 31, 33 (Fig. 2c), as described at Col. 2, lines 14-37, and at Col. 3, line 62 - Col. 4, line 5. These grooves

do not extend completely through the substrate, but as illustrated and described, they extend very close to the top surface 22 of substrate 20. Certainly they extend further than the 20% of the substrate thickness, that is recited in both claim 14 and 19.

After forming integrated circuits on the second (top) surface of the wafer, Motamedi describes the formation of a second pattern (56) on this second surface and a dry etching of this surface to “remove the thin web of silicon joining the beam to the surrounding substrate (Col.2 , lines 64-68), as illustrated in Figs. 2e and 2f. See also Col. 5, lines 20-25.

Applicant is unable to discover the third etching step in the cited reference, which is asserted in the Office Action as being shown by Motamedi. Contrary to the assertion of three etching steps, it is submitted only a single etch of the substrate is made from each side, in the reference. the second etch joining the top and bottom trenches to separate the structure from the substrate. There is no suggestion in the reference to lead one of ordinary skill in the art to the conclusion that a third etching step would be needed for any reason, and accordingly the reference cannot teach the claimed invention.

In fact, there is no need for a third etch in the reference device, since the purpose of the patented process is to produce a cantilevered beam, and that is done in two etching steps. In the present invention, two steps do not produce a released structure; the third etching step is used to separate the large area stage from the surrounding substrate and to undercut and release supporting flexible cantilevers. No such structure is provided in the reference, so there can be no teaching of a process for fabricating that structure.

Claim 14 recites three etching steps on first, second, and first sides of a substrate in sequence, and clearly defines patentably over the reference, which only shows two etching steps.

New claim 24 defines the third step as including further isotopically etching the top (first) surface to produce released cantilevered structures, and new claims 25 and 26 define additional steps which further define over the reference.

Claim 19 defines the three etching steps of claim 14, and also defines the first step as extending less than 20% of the substrate thickness, the second step as being less than the remaining thickness, and the third etch as causing the trenches to intersect to free the defined structure. As noted above, the reference fails to disclose the claimed steps.

Claim 20 similarly defines the three etching steps for releasing a platform and for undercutting and releasing supports and electrodes for the platform. Again, no such process is suggested in the reference.

Claims 21-23 are dependent on claim 20, and add features which further define over the reference.

New claim 24 is dependent on claim 14, and defines the step of isotopically etching the top surface trench. No such step is disclosed in the cited reference, which discloses anisotropic etching of the bottom surface and dry etching of the top surface.

New claims 25 and 26 are dependent on claim 24, and add features not found in the cited references.

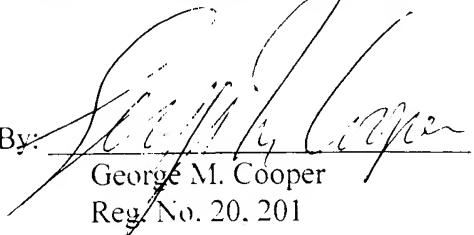
New claim 27 is an independent claim directed to a three-step etching process for fabricating a MEMS platform supported by released, integral, flexible supports. As discussed above, the three etching steps are nowhere to be found in the cited reference, and accordingly this claim is believed to be clearly allowable.

Claims 28-33 are dependent on claim 27, each adding features to further distinguish over the cited reference. These claims are also believed to be clearly allowable for the reasons discussed above.

In view of the foregoing, it is submitted that the claims of the present application are clearly patentable over the reference relied on in the Office Action, and favorable reconsideration is, therefore, respectfully solicited.

Respectfully submitted,

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